



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1968

A NONPROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1800 MC.

W6IFE Newsletter

October 2003 Edition

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At the **2 October** 2003 meeting of the SBMS, Wayne, KH6WZ will talk about the writing of articles, publishing and getting paid. Wayne has had material published in CQ and QST magazines for some time now. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month. Check out the SBMS web site at <http://www.ham-radio.com/sbms/>.

Last Meeting- Chuck, WA6EXV provided a good demonstration and talk on the use of the DSP-10 computer controlled two meter radio for use as an IF radio on microwave bands. More of the current technology available to the builder ham. Thanks Chuck. Welcome to visitors Scott Carpenter, new call K0SMC, Fort Dodge IA. and Matt Lechlitter, W6KGB of Oxnard. Welcome to new members Michael Seguin, N1JEZ of Burlington VT and Robert Kendall, WA6VHS of Lomita, CA. and Larry Frakes, KG6EG of Huntington Beach CA. 29 people present.

Scheduling:

6 November Measurements using older test equipment, Dick, K6HIJ

4 December TBD

8 January TBD (note first Thursday is 1 Jan)

5 February TBD

"Wants and Gots for sale"

Want WR-42 waveguide relay Dave WA6CGR 909-318-5154.

Want waveguide relay for 24 GHz, WR-90 to WR-75 quick release mechanism - Miguel W6YLZ 818-349-8525

Want- WR-75 relay- John KJ6HZ 909-683-1434

Want Boonton 190A VHF Q-meter information or manual. If anyone has a manual, schematic, operating notes, etc. I would be happy to pay reproduction and mailing costs, if you could provide some help. - . Dick K6HIJ 760-253-2477

Free- 6 ft rack with wheels Larry, K6HLH 661-264-3126

For Sale- 10 GHz system -DEM and Qualcomm parts plus Radio Shack HT-100 IF radio. 2 dB NF about 1 w output. \$650 Ken W6DTA 818-848-9059

Activity reported at the September SBMS meeting- Dick, WB6DNX has stabilized his HP3801 GPS unit; Chris, N9RIN participated in the 10 GHz contest; Pat N6RMJ worked on his rig some more; Mike, W6YLZ did some TWT rework and dish alignment; Larry, K6HLH built a DSP-10 radio and took down his 1.2 and 2.4 GHz transverter from the tower to clean the water out; Jerry, N7EME worked the contest and has his 1152 oscillator back for more rework; Dick, K6HIJ did some more work on 24 GHz test equipment; Dave, WA6CGR some compression problems in his 10 GHz amplifier and has his microwave lab working; Doug, K6JEY did some work on his rig along with getting a new DEMI sequencer; Dennis, WA6NIA worked the contest; Scott has a new call K0SMC and made his first ham radio contact on 10 GHz to Mexico; Ed, K6ODV has his 10 GHz rig dies after 10 minutes of operation; Chuck, N6EQ roved during the contest; Larry, KG6EG has a 10 GHz rig in work and received a ticket from Forest Service for having a battery in the field; Glenn KE6HPZ worked the contest, is building a new 10 GHz rig and reported that DeLorme 4.0 has good profile mapping system; Chris, WB6HGW worked the contest; Matt W6KGB worked the contest; Kurt, K6RRA has been having health problems; John, KJ6HZ rebuilt his rig right before the contest (as usual) and worked Mexico; Wayne KH6WZ worked the contest and has a new IF radio; Paul, N6DN had the wind blow over his tripod and is working on a 5 GHz rig; Tony, KC6QHP roved during the contest and has a reflock GPS 10 MHz source working; Greg, K6QPV has his 2.3 GHz rig fixed and is working on a 3.4 GHz rig; Ed, W6OYJ has his Pcom 24 GHz rig on air, made some changes in the tcxo to lower the drift; Ken, W6DTA had some rig problems in Mexico; Bill, WA6QYR purchased a 1 W 24 GHz amplifier, received the DSP-10 kit in the mail, and is working on the Pcom mods; Chuck, WA6EXV had back surgery, built the DSP-10 and worked the contest from Home; Gary, K6KVC had more ATV contacts and is working on a 5 GHz rig; Mel, WA6JBD roved during the contest, has a rubidium standard, and has a GPS based PCS frequency standard, which he plans to report on next time;

Hi All, here is the story of DN63. 24 grids on 902 down, one to go. That will be from Edgemone on Wednesday. 73 Phil, W6HCC

DN63 TRIP --- 14 August 2003

On 14 August 2003 I traveled to the area north of Casper, WY for a shot to Bill (K0RZ) in Louisville, CO. The route is I25 north to Casper and then about 15 miles north. The trip takes about 3:15 on the interstate. There is a frontage road along I25 north of Casper. This road can only be accessed at an interchange a few miles north of town or at the interchange going to Midwest about 20 miles north. I didn't realize this, so I had to go to the Midwest interchange and double back. About 7 miles back down the frontage road, I found a road, which went,

up a hill to the east. It is an oil lease road, but it leads to a microwave tower on top of the hill. At that point, there is a locked gate, so no further travel is possible. The road is badly rutted from truck traffic. At 0700 when I drove up the road, the sun was tangent to the road. I could see the sides, but nothing in the road. I was going slowly, but I hit a huge chuckhole and really tossed stuff around in the truck (me included!!). Lucky there was no damage!! At the locked gate, there is a second gate, which goes to the microwave tower (about 400 yards away). I was able to orient the truck in this driveway and get it out of the main road. There was quite a bit of oil worker traffic on the main road. Only one asked what I was doing and gave me no problems. The site is DN63UC. There is a view to the SE with some small hills near the boresight, but not in the way. The main problem with the path is a mountain range south of Casper. It is at right angles to boresight and about 8000 feet high.

I called Bill on my cell phone (no roving charges!!) to alert him that I was on site and then set up 433.1 liaisons. (50watts into a long yagi 15 ft above the truck bed) Signals were not very good. We could communicate, but it was not solid all the time. Bill had a high noise level on my heading. While I set up 902, Bill warmed up his 1.5kw EME system. He was able to orient the antenna so that the noise was in a null. Now he could hear me, and with the big rig, his signal was S1-S9 depending on conditions.

Before the trip, I built a low noise preamp and switching unit for 433 MHz. It is controlled by the +12v from the radio for the antenna-mounted preamp. I did not have time for an on-the-air test before I left, so I did not use it. I was afraid it might damage the comm radio. After the microwave contacts, we tested it and it was OK. I could have used it, but I did not want to take a chance on an untested unit in the field.

We fired up on 902 MHz. (50 watts into a dipole/splash feed in the 6' dish.) Bill was able to hear my signal, so he transmitted to me. As I moved the dish, the S meter came up to S4. I thought, "This will be cinch". Then I listened to the audio. Broadband noise!! I moved the dish a few degrees east. There was a signal at about S1. I asked Bill to drop carrier and it went away. We had a path!! [The broadband noise seemed to come from the Casper region. I have no idea what it was. I tuned several hundred KHz each way and it was no different. Luckily the 6' dish was sharp enough that there was no noise on boresight.] We completed a CW exchange with only a few repeats.

We moved up to 2304 MHz. As I was taking down the 1/4-inch hard line feed for 902, I noticed that that -24v breaker was tripped. I then noticed a burnt place on the connector on the end of the hard line. Good design prevailed and all I had to do was reset the breaker. (Prior to the redesign of the truck power system, there were no breakers on the + or - 24v power lines. There was a master 50A fuse in the engine compartment, but that was it. Had there been no breaker on the -24v line, I might have had serious burnt wiring or worse!!). Signals on 2304 were bad or worse. They were intermittent and in the noise a lot of the time. We were able to secure accurate frequency and I was able to align the dish. It is surprising how sharp a 6' dish is, even at 2304. Bill put on the high-speed keyer and I was able to piece together the calls and grid. Using his DSP, Bill was able to detect a steady baseline signal from me and decode the message. After about 30 min of signals, we had a contact. My 'fist' was worn out. (This was only the beginning!!)

We set up 5760 MHz. Even with his DSP and my 20 watts, no signal was heard either way. I moved the dish +/- 10 degrees and up/down a few degrees. Still no signals heard by Bill. We decided to move on to 10 GHz. (If we had known that 10ghz would be done on aircraft scatter, we might have tried longer. However, with our history of bad luck on 5.7, we decided to move on after only a few minutes.)

We moved on to 10ghz. (1 watt, water pipe feed in the 6' dish, 2db NF with 6' of flex guide for a feed line) We have always had good luck on this band, so we were optimistic that it would work. Bill has the higher power on this band, so he transmitted first. I immediately heard not one signal, but three!! The signal was about S2 and I had time to orient the big dish accurately. I turned it over to Bill and he heard me. This should be easy! I asked Bill to put his keyer on and send to me. Nothing heard!! Where had the nice signal gone?? After a few minutes of no signal, I realized that we were hearing aircraft scatter and we needed another plane!!

At this time, an old man who had a flock of sheep, came along. I talked to him while I was sending calls and grid. My high speed hand keying must have been a mess while talking and keying! Bill said he had part of the information and I rested my 'fist'. Next time I will take my keyer!!! I continued to talk to the old man and listen

to the receiver. For about 5 minutes there was nothing. Then there was a short (about 0.5 sec.) burst during which I could not even detect that it was Morse code. Then, after another 5 min or so, there were some better bursts and I got the data. Bill still needed my call sign, so I sent some more. Even with his DSP, there was no baseline signal as there was on 2304. Soon he came back and said he had a good burst and got the data. I listened for his R and almost immediately got a good string of R's. I sent R back to him and he immediately responded OK. We must have come into a time when there were a number of planes in the path. 10 GHz scores again!!! (With a little help from the airline industry.)

We finished the contacts at about 1045 hrs. We started shortly after 0700. About 3:45 for 3 contacts and one failed try. This was by far, the most difficult contact that we had in the quest for 902 grids (this is #24) and other 'low band' contacts. The distance was about 225 miles, but the path was obstructed, both at my end and then again in northern Colorado. It was really good that Bill could bring his 433.1 EME rig on line. Without it, liaison would have been difficult, and hence the contacts would have taken even more time. 73 Phil, W6HCC



(above) Last meeting Chuck, WA6EXV center talked about his DSP-10 rig while l-r Dick, K6HIJ, Chuck, N6EQ and Larry, K6HLH looked on. Larry had built the DSP-10 on the table in front of WA6EXV's computer.



(above) Ed, W6OYJ with his 24 GHz wideband rig above the beach in DM04cj near Santa Barbara during the second week of the contest. Ed and Bill, WA6QYR roved and worked Chuck, WA6EXV who was at Goleta Beach DM04bk.



(above) Chuck, WA6EXV at the back of his van with the DSP-10 IF rig working the stations south along the CA coast and on down to Mexico DL29cw on 10 GHz. The DSP-10 appears to be a good tool to help work weak signals. Contest operation isn't what it was made for unless you are a whiz at running the computer to find signals that vary in frequency from one operator to the next. It also has a problem with large amplitude signals. Most of the signals coming from Mexico were loud, so Chuck had to either turn the dish off path or put his hand over the feed to attenuate the received signals.



(above) The line up at Goleta Beach DM04bk. Ed, W6OYJ on the left with his 3 ft dish and transverter plus IF radio mounted on the back of the dish. Next is Bill's (WA6QYR the picture taker) rig with the 18 inch DSS dish, transverter in the HP430 case on the tripod, and Kenwood TS700A on the tailgate behind Ed. On the right is Chuck, WA6 EXV with his Primestar dish with the transverter mounted on the feed. His power supplies and IF radio (DSP-10) are in the back of his van. The dish is mounted to the trailer hitch and to a plate coming off the top of the van.

The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast and beyond. Dues are \$15 per year, which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer as listed under the banner on the front page. If you have material you would like in the newsletter please send it to Bill WA6QYR at 247 Rebel Road Ridgecrest, CA 93555, bburns@ridgecrest.ca.us, or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

San Bernardino Microwave Society newsletter

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